

- (vi) In OSI network architecture, the dialogue control, and token management are responsibilities of
- (a) Data link layer (b) Network layer
(c) Transport layer (d) Session layer
- (vii) Which of the following IP addresses can be used as loop-back addresses?
- (a) 1.1.1.1 (b) 127.1.1.1
(c) 127.0.0.1 (d) 255.255.255.255
- (viii) How many pins does RJ-45 contain?
- (a) Two (b) Four
(c) Eight (d) Sixteen
- (ix) Four bits are used for packet sequence numbering in a sliding window protocol. What is the maximum window size?
- (a) 7 (b) 8
(c) 15 (d) 16
- (x) HTTP is _____ protocol
- (a) Presentation Layer (b) Application Layer
(c) Transport Layer (d) All of the above

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2. (a) What is difference between half duplex and full duplex? (2)
(b) Define protocol. Describe the key elements of protocols. (3)
(c) What do you mean by the Bit Interval and Bit rate in a digital signal? (2)
(d) Explain synchronous and asynchronous modes of transmission. (3)
(e) Describe framing and the reason for its need. (2)
(f) How analog to digital conversion is done? (3)
3. (a) What is single bit and burst error? (2)
(b) Calculate the checksum when sender wants to send 4 frames each of 8 bits 11001100, 10101010, 11110000 and 11000011. (3)
(c) Encode the data 1011101 in even parity, by using Hamming code. Find out code word. (5)
(d) Suppose you want to transmit the data 100111001 and the generator polynomial is $X^6 + X^5 + 1$. What bit string is actually sent? (5)

4. (a) What is crosstalk? How is it minimized in case of twisted-pair of wire? (1+2=3)
- (b) How do guided media differ from unguided media? (2)
- (c) What is the function of router? How does a router differ from a switch? (2+3=5)
- (d) Define the terms broadcasting, multicasting and unicasting. (5)
5. (a) What is the drawback of message switching? How is it overcome in packet switching? (2+3=5)
- (b) How the inefficiency of sliding window protocol is overcome in Go-Back-N ARQ protocol? (5)
- (c) Differentiate between virtual circuit and datagram. (3)
- (d) Find the class of following IPv4 addresses: (2)
- (i) 192.168.1.210
- (ii) 144.12.100.2
6. (a) Why guard bands are used in FDM? (2)
- (b) What is the difference between Frequency Division Multiplexing and Wave Division Multiplexing (3)
- (c) What is the first address and last address of IP address 180.8.17.9 (3)
- (d) Compare and contrast between error control and flow control. (3)
- (e) How congestion control is performed by leaky bucket algorithm? (4)
7. Write short notes on (any five): (5 × 3 = 15)
- (a) Comparison OSI and TCP/IP reference model
- (b) Advantages of fiber optics
- (c) Piggybacking
- (d) Transmission impairment in computer network.
- (e) Control frame of HDLC
- (f) CSMA/CA
- (g) CIDR

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